Appendix K - Technology Solutions

Technology Solutions

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Technology Solutions

As part of Michigan's IT strategic planning process (see appendix A), the Michigan Department of Information Technology (MDIT) and its clients, via the Michigan Information Technology Executive Council (MITEC, see appendix D), examined technology and government business trends and their impacts on each other. They reviewed both personal professional observations and key worldwide trends as explained by industry experts, including Gartner and Forrester. The result of this exercise was the identification of which technology solutions might play the greatest role in improving government services in Michigan.

MITEC, in close collaboration with MDIT, chose these seven technology solutions for further investigation of their possible enterprise-wide adoption. Since these technologies were selected, seven subcommittees comprised of representatives from MITEC and MDIT have reviewed where these technologies may apply to specific agency clusters and the state as a whole. The subcommittees are now preparing business case analyses of the most promising projects for each technology with the intent to integrate these technologies into the upcoming budget cycle recommendations for funding enterprise projects.

While the chosen enterprise pursuits will be only a small subset of ideas discussed, MDIT will continue to work with its clients to identify the clusters of agencies that can benefit most from pursuing other promising ideas. It is anticipated that some part of each of these technology groupings will be adopted by some collaborations of agencies throughout the state, realizing the leveraged technology promises of a statewide consolidated IT department.

Relationships among the seven technologies

Synergies and dependencies exist among the seven technologies. Figure 1 represents the relationships among the technologies. Examples of the relationships include:

- **Integrated infrastructure:** Each of the solutions is enhanced having an integrated infrastructure. An integrated, modern infrastructure enables the adoption of new technologies and provides the means to link the technologies into a standard tool box available for state applications.
- **Data integration:** A data integration approach enables citizen self-service, enterprise contact center, and shared administrative services by providing a common repository of data from multiple sources to be shared among multiple sources. A citizen could renew a vehicle license plate and pay her taxes online during the same transaction, applications, such as a data warehouse, would share appropriate information among the multiple state agencies involved. Likewise, help desk staff at an enterprise contact center would be able to answer questions on multiple topics from any caller by accessing information shared in the data warehouse.
- **Collaboration tools:** Collaboration tools will enable mobile workers, contact centers, and shared administrative services by enabling workers to communicate with each other using any of a suite of tools. A specialist could contribute from home during his convalescence from podiatric surgery by using collaborative

document editing tools and video conferencing to help his team complete their biennial strategic plan. Or a contact center staffer could instantaneously locate and communicate with a subject matter expert, via instant messaging, to answer a citizen question without having to hang up the phone.

- **Enterprise contact center:** The enterprise contact center approach integrates with and enables efforts in all of the technology areas. The state could staff its contact centers with workers physically located anywhere in Michigan at any time using mobile worker technologies. Enterprise contact center technology can provide a multi-channel point of contact for handling routine back-office functions and answering citizen requests for information.
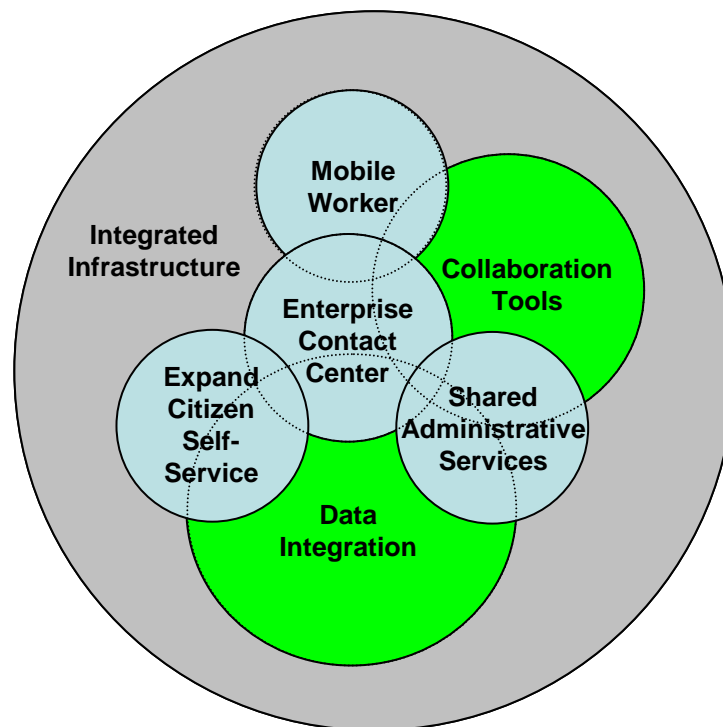
Figure 1 – Seven Technology Relationships

Seven Technology Detail

The following seven sections provide detailed information about the seven technology solutions. Each section begins with a brief description of the technology area and follows with an analysis of how the technology can effect change in the way the State of Michigan serves its constituents. MDIT will continue to work with its clients to ensure that the optimal mix of these technologies are adopted and leveraged by all appropriate stakeholders including, but not limited to, the various agencies of the State of Michigan.

Collaboration Tools

Collaboration has become a daily necessity for conducting state business, and is typically conducted through a variety of disconnected systems—including telephone, email, fax, messaging, and Web conferencing. These systems, and the collaborative content created by them, are managed and stored in repositories, such as databases, file systems, and Web servers, that are spread across departments. The volume of collaboration and its associated information is only growing, and departments are finding it difficult to ensure security, manageability, and timely access to information and applications.

"Electronic Collaboration Tools" are typically a set of tools or a single tool to facilitate participation and complement face-to-face meetings and allow employees to work together in real time without face-to-face interactions.

A unified workplace includes collaboration tools such as:
- Real time communications that revolve around messaging:
  - Email
  - Voicemail
  - Instant messaging
  - Audio, video, or web conferencing
- Shared workspaces that facilitate:
  - Collaborative writing
  - File sharing and versioning
  - Membership management
  - Team decision support (voting, sorting, ranking, surveys)
  - Content services
- Coordination using Group calendaring and scheduling, task allocation and tracking, and file workflow and approvals.

Some tools overlap areas. For example, email can be used for communication between citizens and government departments. It can also enable collaborative work by allowing teams to transfer documents and information back and forth. Instant messaging is used in a similar way, as are workflow products, although the overlap is a little different. Typically they allow collaboration with and among departments, but they work with users and systems, taking information from one group's system and passing it to another group's process. Business rule engines can assist teams in applying business logic in complex workflows.

Current status of Electronic Collaboration Tools

Michigan currently uses voicemail, email messaging and audio conferencing, as well as group calendaring and scheduling and understands the benefits these technologies bring to worker productivity and collaboration. With shrinking staff and budgets the State of Michigan is looking to further increase productivity by facilitating the collaboration of it workers.

Key Benefits

Opportunities for Michigan government

Collaboration within the State of Michigan is increasingly important. Collaboration brings together resources to create interactions and synergies that can save money by increasing speed of response, improve team productivity and reduce waste of all kinds.

The State of Michigan is looking for more effective and efficient ways to:
· Schedule meetings
· Track the status of multi-person projects
· Update contact information statewide to avoid the delays and miscommunication problems caused by out-of-date information
· Communicate quickly with colleagues across the hall and around the State

An illustration of those who could benefit from the use of collaboration tools include:

Teams and Project Management	- Quickly schedule meetings with one message - Store project specific e-mail messages in a shared folder
Administrators and Executives	- Manage schedules with confidence with direct access and the ability to make updates as needed - Have task lists, project schedules and meeting notes on hand and ready for review
Human Resources	- Maintain a company directory - Post company events and holidays

The opportunities for collaboration tools abound in the State of Michigan. A few examples include:
- Web Conferencing to support all types of online meetings and applications, such as live help, support, training, and online seminars, reducing travel for employees.
- Presence awareness through instant messaging that enables users to determine whether certain subject-matter experts are available to communicate in real time.

Both components allow a customer service representative, for example, to assist a customer quickly by conducting real-time online meetings, sharing information and, if necessary, locating an expert immediately to solve a problem. The conferencing and messaging technologies, combined with calendar, content management, and self-service publishing capabilities, enable virtual teams to work more efficiently. Also, Web conferencing and instant messaging allow people have meetings sooner because shorter meetings without travel are easier to fit into calendars.

State goals achieved

Using Collaboration Tools is one way Michigan can work to provide a better government. Key executive strategies include:

- **Cut red tape**: Redesigning processes streamlines efforts, reducing time, mistakes, and cost
- **Frugal management of workplaces, tools, and equipment used to run state government**: Standardizing the IT tools used to deliver services across the state will reduce the maintenance costs associated with maintaining multiple systems that do similar work
- **Make state government both a great place to work and a place that produces great work by ensuring our government is diverse, inclusive and representative of our population:** Make sure state employees have the tools necessary to do their jobs - all while lowering overall costs.

By using collaboration tools employees of the State of Michigan will be able to become more effective and efficient in supporting and servicing Michigan citizens.

Enterprise Contact Center

Government created the service economy. Delivering service is government's primary business. Data from the Pew Internet and American Life project, *How Americans Get in Touch with Government*, May 24, 2004, suggests a synergy between multi-channel contact centers and the practices and preferences of citizens. Forty-two percent of respondents told Pew that their last contact with government was over the telephone and 29 percent said it was through a Web site. Only 20 percent reported that their last contact was in person, with the remainder indicating contact by email and conventional mail. The results affirm an orientation toward multi-channel service delivery, which can be coordinated through an enterprise contact center infrastructure and scaled to meet the growing volumes of mission-critical traffic among agencies. [1]

Customers calling the State of Michigan face a multitude of telephone numbers to reach all the different services offered. This is partly caused by technical limitations of legacy interactive voice response (IVR) technologies and by the organization of state government. Different lines of business among, and even within, agencies have separate contact center operations. The burden is on our customers – the citizens of Michigan – to find the right phone number or the right email address to receive services. New technologies in the contact center arena will enable the state to minimize numbers for the customer to call and efficiently route their call to the appropriate agent.

Description of Solution

Contact Centers were known in the past as the phone center where a telephony network connected people with agents via telephone. Today the contact center uses multiple channels of communication (phone, email, Web-based systems) to capture and deliver calls and messages to the agents who are available at single or multiple, distributed locations. The contact center is the point of contact regardless of the channel used by the caller.

The contact center infrastructure is comprised of multiple technology layers. The telephony layer includes the switch, PBX, and transport protocols such as IP telephony and voice over IP (VoIP).

The call management layer includes automatic call distribution for managing and routing calls; computer telephony integration which enables screen pops for call agents; interactive voice response, which allows callers to access the information and make the requests needed through automated telephone recordings and prompts; and universal queuing, which treats all forms of citizen contact as a single stream of inquiries and requests and allows for more cost-efficient systems by deferring email and Web site call-back requests to agents as they become available from normal calls.

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[1] "Hello. **The First Word in Reinvigorating the Relationship between Citizens and their Government. An Introduction to Citizen Service Technologies and 3-1-1**," Center for Digital Government

Customer experience management applications include applications that provide for call monitoring and recording, quality assurance, knowledge management, workforce management, agent training and e-learning.

Customer relationship management software provides the information on the customers.

Current Adoption Rate

There are over twenty-one "511" systems currently in place across the country providing travel information, 14 of which are state systems. Virginia is looking at a platform that all local governments could share, and has already implemented 511Virginia.org – a 511 service that provides information on highways, public transportation, travel services, and 511-information for adjoining states. Nebraska, Utah, Montana, North Dakota and Kansas have added an alert system, which includes the capability for them to place AMBER Alerts, homeland security alerts, and general transportation alerts on the 511 system.

New York City, Baltimore, Chicago and other cities are using "311" for non-emergency city services. Universities are implementing 311 services in on campus and could also cover state and regionalized federal services. Supporting traveler information systems are traffic cameras and other technology.

Thirteen states offer full "211" coverage, connecting people with community services and volunteer opportunities. 211 currently serves 14% of Michigan's population with service available in Calhoun, Kent, Kalamazoo, Ottawa and Jackson counties.

Michigan

Continuation of each business unit developing their own solutions means that some are continuing to use old technology that requires physical changes to the switch rather than utilizing soft applications. Additionally, multiple solutions are being put in place – requiring more resources to support a complex and heterogeneous environment. Even where the business units are using the same applications, they are being customized differently, reducing the possibility of tying the applications together even for business continuity efforts. And some agencies that have a need do not have the financial resources to put another stand-alone system in place.

The need for call centers in the state has grown significantly over the past five years within business units. The Department of Treasury implemented a call center that supports revenue collection using a full complement of CRM, automatic call distribution, computer telephony integration and interactive voice response. The Bureau of Unemployment Services was able to close regional offices because of efficiencies gained through its Remote Initial Claims Centers. The Office of Retirement Services and Department of State are putting call centers in place. The Department of Natural Resources has outsourced their campground reservation call center. Departments of Human Services and Community Health have also outsourced call centers.

The State of Michigan has made great strides in providing more convenient services to the citizens of Michigan. Our next step is to take a comprehensive look at how we can utilize our current investments to create new opportunities and ease access for the citizens.

Key Benefits

Opportunities for Michigan

MITEC identified several opportunities for Michigan to explore that could be available if we take an enterprise approach towards implementing contact centers. These opportunities would bring greater efficiencies to state and local government but would be too costly to implement without having an enterprise infrastructure in place. This is only the tip of the iceberg – one cannot even imagine the possibilities that will arise a few years down the road.

Examples of where we could benefit now include:
- Creating a single access point for constituents to contact the State of Michigan for services (1-800-Michigan); Integrated 800 #s; MDOS (1-800-Call-SOS)
- N11 Services – 211,311, 511, 711 Services to Relieve Overburdened 911 Systems. Creating an enterprise call center infrastructure would also open new opportunities for supporting local government – such as through 311. An enterprise contact center would position the State of Michigan to take advantage of the unique benefits of IP contact center technologies and applications to combine voice, data, web, and e-mail traffic of client requests from various sources. This can facilitate and streamline the delivery and implementation of shared e-government service portals, thereby streamlining the number of governmental employees required to support N11 services while providing higher levels of flexibility and automation for these services. A 511 service can benefit highway patrol offices by reducing calls from travelers asking for road condition and weather information. Several states have incorporated Amber alerts into their 511 systems.
- Department-specific functions such as Civil Service (HRMN), eligibility determination and application, business profiles for MEDC account managers.

Goals Achieved

Moving on the path of the enterprise contact center will bring more opportunities for advanced customer service, and the centralized contracting, oversight and management will achieve economies of scale in purchasing, contracting and support as well as interoperability. The interoperability of these systems is necessary for integrated voice/data applications such as unified communications as well as for creating a mobile work force and using virtual teams to offload in peak hours. Greater efficiencies will result when we have the opportunity to manage peak seasons by using staff across call centers.

Better government means improving the effectiveness and efficiency of the delivery of services to our customers. An enterprise contact center would enable more resources to be directed to the program services instead of towards replicating programs throughout the state. Improving the effectiveness and efficiency of the

delivery of services to our constituents means that more resources can be directed to the services themselves.

Standardizing the call center infrastructure would enable the State of Michigan to efficiently support agency call centers by reducing the complexity of the environment and dedicating resources to support the contact center infrastructure. It would also enable the reuse of components from previous developments. An enterprise contact center infrastructure would enable efficient use of system capacity and reduce costs for ongoing maintenance by limiting the number of point solutions in place. By leveraging a common infrastructure, the State of Michigan can more economically take advantage of new technologies to improve citizen access to the state (speech recognition) as well as offer workers more flexibility (use voice over IP to enable workers in remote areas, remote-workers).

Next Steps

The first step for the State of Michigan is to focus on the existing call centers and those currently in the planning stages. It is imperative that we develop a telecommunication center of excellence to support standard call center technologies and create the positions to staff this center of excellence. Required policies for planning, security and technology must also be developed. Tighter coordination with DMB Acquisition Services must occur to ensure that any invitations to bid or outsourcing contracts with call center or contact center technology are submitted for MDIT review and signoff. We must then identify the standard products and platforms required for supporting an enterprise call center infrastructure. In order to even consider virtual call centers and the benefits that could be achieved by balancing peak call times across call centers, the state needs to standardize on these common tools, including a common IVR platform. And where, possible, we need to evaluate consolidating facilities.

We can then begin to address those call centers that are currently being outsourced. MDIT will conduct a feasibility study and ROI analysis for in-sourcing existing outsourced centers, including capacity planning and ongoing support and maintenance as well as develop a long-term plan for incorporating these centers into an enterprise solution.

Future state planning will include building the virtual contact center. Virtual contact centers allow multiple physical locations to operate as a logical center. Calls and other contacts are routed independent of physical location. This would enable the use of work-at-home technologies as well as provide for redundancy across locations. The business case for the development of an enterprise virtual contact center includes looking at the feasibility of the executive branch agencies usage as well as where localities could benefit from this type of infrastructure. This is where we can look at strategies for providing N11 services – for travel, community services, etc. A feasibility analysis will also include the support strategy and long term staffing needs for the state to move in this direction.

References

Gartner: Create a Company-Wide Plan for Automated Speech Recognition, Steve Cramoysan (12 March 2004)

Hype Cycle for Human Computer Interaction 2005, Jackie Fenn, Alexander Linden, Steve Cramoysan, Toby Bell, Bern Elliot

Hype Cycle of Contact Center Infrastructure 2005, Bernard Elliot, Bob Hafner, Esteban Kolsky, Steve Cramoysan

www.211.org

www.deploy511.org

Data Integration

The State of Michigan's executive branch consists of 20 separate departments and multiple agencies. Each department is designed to provide government services with a particular policy orientation. As a result, state departments and agencies interact with citizens, businesses and other governments on a daily basis.

Over the past decade, these disparate departments have begun to interact and collaborate on projects, initiatives and policy direction. Driven by the governor's statewide priority areas (e.g. The Economy, Health and Human Services, etc), all 20 state departments have come together to work toward a state-wide vision of goals. Challenged to redesign, realign and redefine state government, these departments have developed, through the Cabinet Action Plan and Budgeting for Outcomes, shared programs, projects and initiatives to serve the citizens of Michigan today and in the future.

As a result, the need to develop a common method of communicating, sharing and bringing information to decision-makers has grown increasingly important. However, today's enterprises, especially government, are drowning in a sea of unorganized data, unable to leverage its full potential. Specifically, the State of Michigan is challenged to understand and share the information that exists in its various departments. Departments and agencies are not able to get the information they need because they do not understand what information may be available and cannot link information from multiple sources. These agencies are unable to make optimally beneficial proactive or reactive decisions because they do not have information in a timely manner, even if it presently exists in the state.

For the State of Michigan, the time to address data integration, sharing and knowledge is now! We have more information today than ever, and advances in technology enable the sharing of this information with decision-makers anywhere at anytime via multiple devices connecting with land-based or wireless networks.

Integration Challenge

A variety of issues surround information integration in government, including information ownership (once shared), privacy and access, data quality, security, legal concerns and statutory requirements, trust, business operations, and the overall culture of agency interactions and public relations. All must be addressed in order for an integration initiative to be successful. Silos of information that exist to serve the programmatic and service delivery needs in justice, public health, homeland security, environmental protection, social services, and others could be made accessible across the enterprise in a secure, structured and collaborative manner. Such access provides benefits that outweigh implementation costs, such as reduction of redundant data entry, improved data integrity, increased accuracy and immediacy, and improved decision-making.

Current Adoption

According to Gartner, there is an 80 percent probability that "through 2008, the creation of an accurate, timely and rich single view of the customer across channels and lines of business will be a key enabler for reducing costs, managing risk, and increasing revenue and profitability in customer-centric organizations."[2]

The State of Michigan has already begun to realize benefits from data sharing and integration. In the Teradata warehouse, the State of Michigan currently is sharing over 2 terabits of information, which equates to approximately one-tenth of all of the books in the largest library in the world, between five state agencies. Additionally, agencies are working to develop data sharing agreements for projects that involve multiple agencies. Specifically, the Child Support Enforcement System (CSES) currently shares information between Department of Treasury, court systems, Department of State, and Department of Human Services to ensure that child support payments are paid on-time.

Key Benefits

Overall Benefits

Many benefits will emerge as a result of data sharing, integration and knowledge, including:
- **Improved Communication:** For the State of Michigan, one of the most important benefits from integration is the improvement of communications between departments, agencies and even among workers within their own agency.
- **Improved Decision-Making:** As a direct result of improved communications and up-to-date information access, key managers and personnel will be able to make proactive and reactive decisions faster and more accurately.
- **Enhanced Service Delivery:** Across the entire spectrum of involvement within state government, the ability to easily access reliable and accurate information is essential for enhanced service delivery. By sharing across programs, agencies, and even other governments, the State of Michigan will have better information to use in providing better service to the citizens, businesses, governments and employees it serves.

State Government Goals and Business Drivers Accomplished

The concept of data integration, sharing and knowledge is one way in which the State of Michigan can work toward providing a better and more efficient government. Breaking down silos and leveraging what information we have between agencies will enable quicker decisions and more satisfied constituents. Specifically, this technology will provide a foundation for the State of Michigan to achieve some of its most important goals and strategies as defined in the 2006 Executive Budget Book.

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[2] Radcliffe, J. (7 Oct. 2004) Create a Single Customer View with Customer Data Integration, *Gartner,* 2.

Opportunities for Michigan government

The opportunity for data integration, sharing and knowledge abound in the State of Michigan, either across all agencies or clusters of agencies with closely knit business requirements. The Michigan Information Technology Executive Council (MITEC) has already identified examples which include,

- **Human resource information:** Having one trusted source for all human resource information will enable streamlined efficiencies for administration
- **Integrated health system:** Being able to have one system for Medicaid and all public and mental health information is critical to ensure citizen safety and administrative efficiencies to lower our exponentially growing medical costs
- **Criminal justice information**
- **e-Procurement**
- **State-fair applications**
- **Homeland security subscription notification**
- **Environmental data**
- **Integration of DCH and DHS data**
- **Treasury and local units of government (principal residence)**
- **Case management system for each Michigan citizen**
    - Birth records
    - Death records
    - Driving records
    - Tax records
    - Courts
    - Independent data sources (SSA, IRS, etc)
- **Business registration process (UIA, Treasury, DLEG)**
- **Income eligibility integration (TANF, lunch programs, housing assistance, school loans, etc.)**

Expand Citizen Self-Service

Whether it's using an ATM to get cash at midnight or a kiosk to check in before a flight instead of waiting for a ticket agent, self-service has become commonplace.

Credit card companies offer cardholders the option of checking their balances, making payments or applying for more credit over the phone and online. Gas station customers can fill up their tanks and pay at the pump.

Meanwhile, 68 percent of U.S. households have Internet access, with penetration expected to grow to more than 77 percent by 2009. With this access comes the expectation for on-demand, self-service options for doing business with state government.

A large portion of this business will be done online. Across the nation, the Internet portal is expected to replace the phone as the primary channel for citizen and business government interaction. How quickly this happens depends on shifting demographics and how well government portals address their customers' concerns.

As the teens that have grown up instant messaging while talking on the phone, listening to music, watching TV and doing their homework reach the age groups requiring more contact with government, there will be significant shift to greater interaction through portals.

More and more, citizens will demand information, access and service around the clock. Conveniently. Cost-effectively. Securely.

At the same time that demand grows, budget constraints require technology solutions that allow government to provide more services, faster and more efficiently – with fewer resources. And, by the way, these solutions must also be easy to use and make transactions seamless.

Benefits and challenges

Citizens benefit from increased access, whether they live in the Upper Peninsula or Detroit; whether they work 8-to-5 or the graveyard shift; whether they're on their home computer or a laptop at a state park.

There are real benefits to government, too, including a single portal of constituent access. Customers can input their information once, and this information can then be shared by the appropriate government agencies, ensuring data that is up-to-date and more accurate.

One of the challenges is for government to understand how citizens use services in order to increase their use of online services. It's not enough to drive citizens online. Government needs to adapt its internal processes and overcome its traditional structure to allow for inter- and intra-agency collaboration.

Another challenge is that moving toward self-service also requires an infrastructure that supports automating electronic payments. While this can bring cost-savings – both from efficiencies and per-transaction – it also means investing in solutions and processes with a high-level of security.

The future

This area is expected to grow in coming years. Michigan is pursuing and investigating technologies that enable self-service, including centralized contact centers, self-service stations and online Web portals. As technology advances and can handle more complex interactions, more constituents will be comfortable using technology as their primary point of contact.

MDIT is working in conjunction with the its 19 client agencies to explore which projects would benefit from this technology to improve productivity and efficiency.

Already, Michigan offers many services and transactions as self-service options. Drivers can use self-service stations at Secretary of State offices to renew license plates, significantly cutting their wait time and allowing employees to provide better customer service to clients who have more complex transactions. Unemployment services can now be requested over the phone and online.

Future use of these technologies includes self-service stations where a citizen can renew a driver's license, buy a fishing license and get travel directions – all from a state office, retail store or library.

Entrepreneurs or industry could also have an easier time doing business in Michigan with more access to forms and information online or through a central call center. Or they may self-report to meet IRS or Environmental Protection Agency requirements and file their unemployment tax information online.

Integrated Infrastructure

Information technology developed independently in the various agencies within the State of Michigan. As the agencies made individual decisions of what technologies to use and how to maintain or upgrade them, the statewide technology infrastructure grew increasingly complicated. This diverse infrastructure of computers, telephones, information storage devices, and computer programming methods prevents Michigan from realizing the optimal value of information technology in the following ways:

- *Support costs:* The diverse components that must be supported require diverse skill sets, including those held only by employees who will soon be eligible for retirement.
- *Procurement costs:* Volume purchasing discounts are lost when purchases are distributed among too many technologies.
- *Interoperability:* Disparate technologies prevent the interoperability of multiple systems, causing redundancy in back-up, information storage, and telephone systems.
- *Aging technologies:* The state's currently installed technologies often do not support the technology applications needed to move Michigan forward.

Achieving an integrated infrastructure would move Michigan toward realizing all of the benefits that IT centralization promises. Michigan's integrated infrastructure would consist of two main technology foci, centrally managed voice systems and the "Michigan/1" program.

- *Centrally managed voice systems:* Providing the central management of voice systems throughout state government enables economies of scale in the purchase of equipment and provision of support to state telephone systems. A consistent implementation of telephone systems across the agencies also allows for those systems to work together, ensuring that call and voicemail transfers are seamless across state government. Finally, central management of voice systems provides an opportunity to move the state's system forward with new telephone technologies, such as voice over Internet protocol (VoIP), that provide the foundation for contact centers, mobile workers, and many other trends in how government does business.
- *Michigan/1 program:* Michigan/1 is a vision for the baseline infrastructure of the state's computing environment that will merge 20 separate agency environments into one, resulting in reduced costs and improved services. Program components include:
  - o Active Directory office platform technology (ADOPT): Will provide a common technology set-up for offices across the state, including standardized computers and the capability to remotely update or fix computers.
  - o Messaging consolidation: Will bring all state email users into one of two common email installations, and all state email infrastructure has been re-designed for optimal cost-effectiveness.

o Storage / back-up: Provides shared solutions for storing the state's data and protecting it with back-up procedures.
o Hosting center server centralization: Will host the servers currently distributed in nearly 30 data centers across the state in three state-of-the-art, centralized data centers.
o Enterprise metrics monitoring: Will track state systems automatically, alerting staff when repairs are necessary.

Current status of integrated infrastructure

Moving toward an integrated technology infrastructure is common among businesses involved in merger and acquisition activity. The merger of information technology departments from the 19 agencies into the MDIT has provided similar opportunities for the State of Michigan. Michigan has begun the integration, as highlighted:

- *State telephone systems:* MDIT is presently responsible for more than 35,000 telephone lines throughout the state, providing central management of installation, maintenance, repair, and contract negotiation. Additionally, MDIT offers software design and support for features such as voice mail and call centers throughout the state. MDIT staff expertise and consultation is available to all State of Michigan phone users, including those that presently contract their phone services outside of MDIT.
- *Messaging consolidation:* MDIT has designed and begun the transition to a standardized installation for all email users throughout the state. The final design will result in consolidating 700 email servers throughout the state into 70 centrally-hosted and maintained email servers, resulting in a significant cost savings and better messaging interoperability among agencies.
- *ADOPT:* MDIT has designed and begun the effort to standardize office technology installations throughout the state. Once completed, the state will realize significant cost savings through reduced purchase and support costs.
- *Hosting center server centralization:* The State of Michigan presently maintains three central server hosting centers that offer convenient state-of-the-art support options for all state agencies. Servers are presently being moved into the hosting center as agencies recognize the benefits of server hosting or as they acquire new servers.

Key benefits

Opportunities for Michigan government

The State of Michigan benefits not only for immediate reasons such as cost savings and service improvements, but also in the fact that future technology applications will require a modern, integrated infrastructure. Some of the future opportunities that will build on the integrated infrastructure include:

- **Contact centers:** An enterprise contact center strategy, where Michigan citizens can contact state government via convenient channels, relies upon having standard phone and computer systems. Various state employees, at various physical locations, will be available to answer citizens' needs at the

touch of a phone or click of a computer mouse. In order to truly function as one face of government, those employees' phone and computer systems must be able to communicate effectively using standard technology system designs.

- **Unified communications / messaging:** As citizens increasingly turn to alternative communications channels such as email and Web access, state employees will need the ability to simultaneously respond with various media. Standard, interoperable technologies will enable employees to monitor and use telephone, email, and Web interfaces as easily as traditional face-to-face interactions.
- **Virtual teams:** Government employees will have to collaborate, across agencies and locations, in order to most efficiently deliver the services that citizens demand. The technology tools that will allow these employees to share data and information will require that an integrated infrastructure provides the link among all agencies statewide.
- **Mobile work force:** As more state employees work outside of a typical office environment or work from multiple offices, new technologies will be adapted to enable the mobile worker. A worker will carry her telephone number with her, having immediate access to a phone line anywhere she connects her computer to a network. She will have access to any state application she needs, from any state building or from home. She will be able to check email via the telephone. All of these capabilities are built on the foundation of a modern, integrated infrastructure.

State goals achieved

Implementing an integrated infrastructure is essential to Michigan's providing a better government. Integrated infrastructure efforts align with several State of Michigan executive strategies, including:

- **Cut red tape in state government by streamlining services and implementing innovative technology to reduce time, mistakes and costs:** An integrated infrastructure enables MDIT to better support the state's information technology needs. A modern infrastructure will also allow the state to adopt new applications to help employees provide government services more quickly, with fewer mistakes, and at a lower cost.
- **Frugally manage the workplaces, tools and equipment used to run state government and continue to cut government costs:** Integrated infrastructure will allow the state to immediately realize sustainable operational efficiencies as support and acquisition costs of technology are reduced.
- **Offer fast and friendly service to all citizens, whether online or face-to-face, by increasing the number of online services and developing a citizen satisfaction survey to measure performance:** Having an integrated infrastructure provides the foundation upon which the state can build with new technologies to deliver better service to Michigan's constituents.

Integrated infrastructure is a key means to achieve Michigan's IT goal of "manage technology to provide better service and faster delivery." The cost savings, support improvements, and development efficiencies made possible by infrastructure

integration provide a basis for better managing the state's technology. Having an integrated infrastructure will also enable new efforts to "transform Michigan's services through sharing and collaboration" as we remove the technology barriers between agencies. Integrated infrastructure improvements will provide both immediate and continuing returns to the State of Michigan.

Mobile Worker

Whether it's a Michigan State Police officer patrolling interstate I-75 or a Human Services case worker interviewing a client at their home, government employees are providing services to citizens outside of their offices. It is because of services like these and the changing demands of Michigan's workforce that the concept of the mobile worker is being investigated.

Forrester defines the mobile workers as "employees whose jobs intrinsically require them to be out of the office and in the field. They range from traditional field service engineers to delivery drivers to government inspectors. For these workers, access to information systems, such as real-time task scheduling or emergency response, improves their effectiveness and productivity — but even without such access, they would still need to be in the field."

For State of Michigan employees, the concept of being in the field is critical to getting the job done. However, mobile workers today are not able to gather, access and process data while out of the office at remote locations. Instead, valuable time is wasted in travel back and forth to state offices, data is collected and entered multiple times increasing error rates, and current mobile workers are not able to complete transactions while at remote locations. As a result of this delay in service and inefficiency, the state is not able to deliver constituents services where they are needed, when they are needed.

Adoption of the mobile worker

With the growing demands for improved productivity, reduced costs, 24 x 7 service, non-traditional work structures and schedules, and specialized employees, remote access to information and services is increasingly required. And, as Thomas Friedman in "The World is Flat" points out, intellectual work and intellectual capital can be delivered from anywhere. The State of Michigan must adapt to the demands of the changing world by expanding Michigan's services to reach anyone, at anytime from anywhere.

And this is exactly what the world around us is doing. According to AMR Research, 35% of all workers are currently mobile, and their numbers are rapidly rising. Additionally, IDC predicts that 66% of the workforce will be mobile by December 2006, and more than three quarters of U.S. organizations will have adopted wireless technologies by mid 2005.

Both the private and the public sector have found increasingly easy and valuable applications for this concept. Some examples of successful implementations include:

- Eastman Chemical has implemented WiFi to enable its 600 acre Kinsport, Tennessee campus. By doing so, its warehouse workers can now track inventory on PDA's while its engineers monitor chemical mixtures from their laptops.

- New Orleans has slashed crime rates. Wireless surveillance cameras in a high-crime area contributed to a 57% drop in murders within six months of deploying a pilot wireless network.
- Baltimore keeps officers on watch longer using outdoor wireless access points, so reports can be filed directly from the beat on cruiser computers, eliminating the time required to file at headquarters.[3]
- Cleveland steps up productivity. Building inspectors use laptops to collect and send inspection data wirelessly back to the office — reducing the time for permits to be granted.
- Buffalo, Minnesota, utility readers use ruggedized tablets and connect to an 84-node mesh network to send meter readings immediately back to the utility billing system — reducing costly manual reconciliation and re-entry of data
- Buffalo, Minnesota, advances city services. Repair crews receive wireless alerts about new potholes while they are, literally, on the road — improving fix time.
- Boulder, Colorado, uses wireless data networks and GPS to track bus locations and thus can report vehicle arrival times on the Web and at select bus stations.
- The Florida Keys Mosquito Control District uses Cingular's GSM/GPRS/EDGE network to support monitoring and control of more than 61 vehicles to optimize mosquito control and ultimately contain the West Nile virus. 6 Municipalities with large swaths of land or small numbers of mobile employees turn to cellular carriers rather than deploy their own networks.[4]
- Monterey, California, plans a wireless cloud to extend the network to enable remote control of park irrigation systems, alarm systems, traffic lights, and ball field lighting, to save city employees trips to manually change hardwired settings.

Additionally, the State of Michigan has begun to move toward the mobile worker concept. Some examples of this include:

- Inspectors from the Bureau of Construction Codes are currently using rugged laptops on-site to perform inspections. Inspectors are able to log-in at home before coming to work in the morning to upload yesterday's inspections as well as download their current day's permits
- Michigan State Police officers have the capability to access various criminal justice computer systems from wireless laptops in their vehicles
- Unemployment Agency investigators are able to document their investigations while in the field and upload the changes to the main computer systems every night from home
- Department directors and key executives are piloting the use of Blackberry communication devices to improve productivity and be more accessible while away from their offices

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[3] Gartner 18 July 2005 ID Number: G00129619 "Market Trends: Mobile Wireless, North America, 2005" by Tole J. Hart
[4] Forrester "June 16, 2005 Wireless Cities Emerge Municipalities Demonstrate Mobile Enterprise Leadership"by Ellen Daley with Gene Leganza and Benjamin Gray

Key Benefits

Opportunities for Michigan government

The opportunities for the mobile worker technology abound in the State of Michigan, enabling the state to be closer to its citizens and reduce costs. Examples that warrant further investigation include:

- Maintenance and repair workers in the Department of Management and Budget
- MDOT (Survey teams), DHS, DCH
- Staffing call centers (virtual call center)
- DLEG - licensing and regulatory
- Inspections (DNR, MDA, DEQ)
- Licensing and regulatory workers (hospitals, centers, etc)
- Electronic medical information
- Tablets in MDOS branches (intake auditors, collectors)
- Field inspections (MIOSHA, UIA, Civil Rights)
- Presentations
  - Wireless projector / tablet
- Verify business information (MEDC account representatives)
- Mobile identification of citizens (MSP)

State Goals Achieved

The mobile worker technology is one way in which the State of Michigan can work toward providing a better and more efficient government. Specifically, this technology will enable the State of Michigan to achieve some of its most important goals and strategies as defined in the 2006 Executive Budget Book:

- Cut red tape in state government by streamlining services and implementing innovative technology to reduce time, mistakes and costs.
- Offer fast and friendly service to all citizens, whether online or face-to-face, by increasing the number of online services and developing a citizen satisfaction survey to measure performance.
- Use the power of technology to link every community to economic opportunity by making high-speed Internet available to all Michigan households and businesses.
- Keep Michigan's people and commerce moving by improving our roads and bridges and by increasing highway safety.
- Ensure that Michigan's vulnerable citizens have access to prevention and early intervention services.
- Improve the delivery of health and human services by lowering overall costs, improving technology and streamlining the way work gets done.
- Improve homeland security by integrating resources from the State Police, local law enforcement, the Army/Air National Guard, and other agencies to ensure an effective and coordinated response to threats.
- In order to foster both environmental performance and economic growth, reduce the time it takes to issue environmental permits.

Additionally, MITEC has recognized the importance of mobile worker technologies in the accomplishment of enterprise-wide business goals. Specifically, this technology will enable the State of Michigan to gather field data electronically, provide on-site services directly to businesses and citizens, and improve working conditions for employees in rural areas.

Shared Administrative Services

The State of Michigan's executive branch consists of 19 separate departments and multiple agencies. Each department is designed to provide government services with a particular policy orientation. The figure below provides a simplified depiction of the varied functions that are contained within each department. The services available within each department can be broadly categorized as "core value delivery services" or "common administrative services." Core value delivery services include those that directly benefit the constituent and include policy and program development and administration as well as the actual delivery of services. Common administrative services include those that are necessary for government to function, such as finance, human resources, and procurement.

The state is currently structured so that each agency operates many of its own administrative services as well as its value delivery services. This has allowed the proliferation of many processes and applications to support services that are very similar across all or multiple agencies. This disparity has resulted in several problems, including:

Shared Services - Simplified Example

- **Lack of optimal process design:** As services have evolved with multiple processes, some agencies have become more efficient while some have lagged. Process information sharing has been difficult across agency silos and applications.
- **Too many manual processes:** The tools used to collect information in different agencies have typically been developed to automate existing processes. This has resulted in a reliance on "paper pushing." Although the papers may be electronic, manual processing is still required as it was before.
- **Cost of maintaining separate systems:** The costs associated with maintaining multiple sets of rules and applications to accomplish the same things in different agencies can be reduced with a simplification effort.
- **Statewide management difficulties:** The collection of information in different systems with different rules has made a statewide analysis of information difficult. It is difficult to compare the performance of similar functions in different agencies because of difficulties in compiling and analyzing relevant data.

"Shared administrative services" is the identification and standardization of the common support functions across the multiple government agencies. Technology enables the sharing of administrative services by providing a common tool set to the

various agencies. Having common tools enable all agencies to adopt efficient processes, reduce maintenance costs, and provide better statewide management.

Enterprise resource planning (ERP) applications are the most common tool used to support the sharing of services. ERP applications are typically suites of modules, with each module supporting a particular service (such as human resources) and seamlessly tying into other installed modules (such as finance and budgeting). ERP systems are designed around established "best practice" processes, so that an organization adopting ERP has a tremendous opportunity to improve its efficiency by redesigning its business processes to align with the ERP functionality. ERP suites are designed to enable the optimal use of information across agencies and functions, including management analytics and reporting that allows executive management to manage from the enterprise perspective. ERP suites also enable the extension of information sharing beyond the organization's typical walls, in state government's case, for example, to include the sharing of services with local units of government or educational institutions.

Current status of shared administrative services

The adoption of ERP systems by private companies to coordinate administrative functions is widespread, with a majority of global 2000 companies using ERP. The ERP vendor marketplace is very competitive, with the major players offering solutions tailored to the demands of public sector organizations. States are using ERP to streamline operations, including examples in Pennsylvania and Florida.

- Pennsylvania has undertaken an aggressive approach to ERP implementation, using modules to standardize financial systems, human resources, procurement, and budgeting across its many agencies. These applications are expected to cut state costs primarily as they enable the shift away from paper-based transactions to optimized electronic transactions.
- Florida has used its ERP implementation to simplify collection of the more than 30 taxes it administers. These taxes were previously collected with many different systems, which processed and stored information in different places. A Florida employee was likely to have to access many different systems to help a constituent with a tax question, an act that can now be done using Florida's tax collection system. As of mid-2004, Florida had reduced its FTE count by nearly 20% and paid for its system implementation with labor cost savings alone.
- Minnesota, in its "Drive to Excellence" campaign, has taken a different approach to sharing services. Rather than adapt an entire ERP system, Minnesota has targeted services and functions common to multiple agencies. Minnesota's plan calls for establishing better processes and governance for each service, including using a common tool set. This approach enables the state to optimize processes across its agencies while gaining the maximum utilization of its existing investments where those systems can be shared.

Michigan has already seen benefits from shared administrative services. The Department of Management and Budget, for example, provides human resources and internal audit services to several agencies with which it has partnership agreements. The Department of Information Technology was formed to optimize the

delivery of information technology services to all of the state's agencies. The concept is not new, but technology can enable a broader realization of the benefits of shared administrative services.

Key benefits

Opportunities for Michigan government

Opportunities for shared administrative services abound in the State of Michigan, either across all agencies or within clusters of agencies with similar business requirements. Examples that warrant further investigation include:

- **Procurement:** Better automation and identification of the state's aggregate demand for negotiation leverage
- **Human resources:** Standardized and automated
- **Audit processes:** Capture of data to avoid duplicate effort required to satisfy internal and external auditors; enable internal auditors to work with multiple agencies
- **Human services / case management:** Having accurate information contained in one system would enable case workers to spend less time on paper work and more time helping the clients
- **Grant application and accounting:** Enable multiple agencies to share grant application information, allow for better budgeting
- **Inventory management:** Greater visibility into capitalized and expensed assets, including facilities and maintenance, repair, and operations (MRO) items
- **Budget development, tracking, and sharing:** The various operational modules can be tied into a budgeting module for more timely management with fewer errors caused by redundant data entry

State goals achieved

The sharing of administrative services is one way in which Michigan can work toward providing a better government. Key executive strategies include:

- **Keep the check book balanced:** Timely and accurate compilation of information from across the state's agencies enables better management of the budget
- **Cut red tape:** Redesigning processes streamlines efforts, reducing time, mistakes, and cost
- **Frugal management of workplaces, tools, and equipment used to run state government:** Standardizing the IT tools used to deliver services across the state will reduce the maintenance costs associated with maintaining multiple systems that do similar work
- **Maintain and improve strong, collaborative relationships with federal agencies, local governments, and the private sector via shared government services:** The adoption of ERP modules or other types of common tools facilitates the sharing of information and services among various branches of the private and public sectors
- **Better stewardship of public funds:** ERP systems can be tied into a "front-end" to enable the sharing of information with the public and public watchdog groups, ensuring that state funds are spent responsibly

Shared administrative services are enabled by information technology, but the full value of technology will not be realized without people embracing the changes made possible by the technology. The State of Michigan must use the adoption of this technology as an opportunity to "transform Michigan's services through sharing and collaboration." The adoption of an enabling technology, such as ERP, will pave the way for agencies to collaborate and change the way that they do business – it is up to the agencies to seize the opportunity to change for the better.

Next steps

Staff from the Department of Information Technology and MITEC will examine the feasibility of implementing shared services throughout the state, including the enabling technologies. This work group will work with key business personnel from across the state's departments to build a business case which will include the following:

- Common functions throughout the state that are solid candidates for shared administrative services
- The various systems, processes, and applications that support those functions
- Business requirements for selected functions that will satisfy all stakeholders
- The best commercial off-the-shelf (COTS) application suites to meet the identified business requirements

Business case results will be presented to MITEC for agreement. Upon MITEC approval, MDIT and its clients will develop a strategy for including shared administrative services in the forthcoming budget cycles, including the identification of performance and cost measurements that will justify expenditures in the Budgeting for Outcomes process.